

■ Limit Switches

● AL type

a. Type

Standard	Series	Type	Name of actuator	Ratings	UL File No.																																		
UL	General-purpose	AL-N11□□UL	Roller lever type	<table border="1"> <tr> <td rowspan="3">DC</td> <td colspan="4">Make and break currents [A]</td> </tr> <tr> <td>Voltage</td> <td>30V</td> <td>125V</td> <td>250V</td> </tr> <tr> <td colspan="2">Load type</td> <td colspan="2">Resistive load</td> </tr> <tr> <td rowspan="2">Continuous current</td> <td>5A</td> <td>5</td> <td>0.4</td> <td>0.2</td> </tr> <tr> <td colspan="4"></td> </tr> <tr> <td rowspan="3">AC</td> <td>Contact current code</td> <td>Voltage</td> <td>Make</td> <td>Break</td> </tr> <tr> <td rowspan="2">B300</td> <td>120V</td> <td>30A</td> <td>3A</td> </tr> <tr> <td>240V</td> <td>15A</td> <td>1.5A</td> </tr> </table>	DC	Make and break currents [A]				Voltage	30V	125V	250V	Load type		Resistive load		Continuous current	5A	5	0.4	0.2					AC	Contact current code	Voltage	Make	Break	B300	120V	30A	3A	240V	15A	1.5A	E44592
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		AL-N21□□UL	Adjustable roller lever type																																				
		AL-N31□□UL	Rod lever type																																				
		AL-P11□□UL	Push plunger type																																				
		AL-P21□□UL	Roller plunger type																																				
		AL-P31□□UL	Ball plunger type																																				
	AL-F11□□UL	Fork roller lever type																																					
	AL-S11□□UL	Coil spring type																																					
	AL-S21□□UL	Spring rod type																																					
	AL-W11□□UL	Wire spring type																																					
	AL-Y11□□UL	Side push plunger type																																					
	AL-Y21□□UL	Side roller plunger type																																					
	AL-Y31□□UL	Side ball plunger type																																					
	Small	AL-SN11□□UL	Roller lever type																																				
		AL-SN21□□UL	Adjustable roller lever type																																				
		AL-SN31□□UL	Rod lever type																																				
		AL-SP11□□UL	Push plunger type																																				
		AL-SP21□□UL	Roller plunger type																																				
		AL-SK11□□UL	Roller arm type																																				
AL-SK21□□UL		Reverse roller arm type																																					
AL-SS11□□UL		Spring rod type																																					

Note: Symbols for lamp voltage and type are filled in □□.

□□

Lamp type

Symbol	Type
1	Neon lamp
2	LED

Lamp voltage

Symbol	Voltage	Manufacture	
		Neon lamp	LED
A	5 to 8V	-	○
B	10 to 15V	-	○
E	18 to 24V	-	○
H	110 to 220V	○	-

b. Performance

Item	General-purpose (AL)	Small (AL-S)
Insulation resistance	Min. 100M (by 500V DC megger) between non-continuous terminals or between each terminal and uncharged metal part.	
Withstand voltage	1500V between each terminal and uncharged metal part	
Vibration resistance ^{*1}	Double amplitude 1.5mm, 10 to 55 Hz	
Impact resistance ^{*1}	300 m/s ²	
Permissible operation cycle	120 cycle/min.	
Temperature rise	50°C or less	
Life	Mechanical 30 million cycles (N1 type) 10 million cycles (other types)	10 million cycles
Ambient temperature	-10°C to +80°C	
Ambient humidity	95% RH or less	

^{*1} Except coil spring, spring rod and wire spring types

Contact reliability:

It was confirmed that these switches work without problem under the circuit conditions of 5V AC/DC and 2mA. However, operation ranges may change depending on environmental conditions and load types. For details, contact Fuji Electric.

c. Operational characteristics

- General-purpose (AL)

Item \ Type	AL-N11UL	AL-N21UL ^{*1}	AL-N31UL ^{*2}	AL-P11UL	AL-P21UL	AL-P31UL	AL-F11UL
Required operating force: OF max.	900g	900g	290g	1500g	1500g	1500g	950g
Return force: RF min.	50g	50g	15g	820g	820g	820g	-
Movement before operation: PT min.	12deg.	12deg.	12deg.	2mm	2mm	2mm	55deg.
Movement after operation: OT min.	65deg.	65deg.	65deg.	5mm	5mm	5mm	35deg.
Differential movement: MD max.	7deg.	7deg.	7deg.	1mm	1mm	1mm	-
Overall movement: TT min.	75deg.	75deg.	75deg.	-	-	-	90±10deg.

^{*1} When lever length is 38 mm

^{*2} When rod lever length is 135 mm

Item \ Type	AL-Y11UL	AL-Y21UL	AL-Y31UL	AL-S11UL	AL-S21UL	AL-W11UL
Required operating force: OF max.	4082g	4082g	4082g	150g	150g	150g
Return force: RF min.	907g	907g	907g	-	-	-
Movement before operation: PT min.	2.8mm	2.8mm	2.8mm	30mm	30mm	40mm
Movement after operation: OT min.	4mm	4mm	4mm	-	-	-
Differential movement: MD max.	1mm	1mm	1mm	-	-	-

- Small (AL-S)

Item \ Type	AL-SP11UL	AL-SP21UL	AL-SK11UL	AL-SK21UL	AL-SN11UL	AL-SN21UL ^{*1}	AL-SN31UL ^{*1}	AL-SS11UL
Required operating force: OF max.	450g	850g	400g	400g	700g	700g	700g	150g
Return force: RF min.	200g	450g	180g	180g	50g	50g	50g	-
Movement before operation: PT min.	2mm	2mm	2.5mm	2.5mm	30deg.	30deg.	30deg.	30mm
Movement after operation: OT min.	4mm	3mm	5mm	5mm	40deg.	40deg.	40deg.	-
Differential movement: MD max.	1mm	1mm	1.3mm	1.3mm	8deg.	8deg.	8deg.	-

^{*1} When lever/rod length is 25 mm